Elyria Site
NOx from Dried Precipitated Powders
Action Plan and Business Impact

BASF
We create chemistry

April 25, 2016

Background

- After the December 2015 production of Cu 6081 revealed that calcination can produce NOx, other dried material calcined on the North end calciners were evaluated
- Actual NOX emission data was produced and reported by a third party
- Filtration and washing do not eliminate the potential for NOx generation in these products
- These calciners are not currently permitted for NOx and do not have equipment to control the potential NOx emissions

Regulatory Requirements

- A source would be *de minimis* if it has the ***potential*** to emit less than ten pounds per day. A permit modification would not required but there must be supporting documentation to prove the daily potential emissions.
- A self imposed reduction of production rates is possible to meet the *de minimis* limit but would require a permit modification
- A source can have a potential to emit of 10 ton/year for a criteria pollutant (which NOx is) before control equipment must be installed. A permit modification would be required

The site currently has the testing data to prove the potential daily NOx emissions are above the *de minimis* limit, therefore a permit modification is required

Short Term Plan

- **Submit permit modification for calciner #1 with self imposed rate limits to achieve *de minimis* level of less than 10 pounds per day**
  - Rate reductions range from minimal to 30% reduction
  - Permit modification approval could take 2 months or longer from Ohio EPA
  - Site will have to maintain records demonstrating compliance with lower production rates

Calcined CuCr Powder	Finished Product	Anticipated Overall Throughput Change
Cu 1800 P	Cu 1800 P	Minimal
Cu 1803 P	Cu 1808 T1/8 Shell	Minimal
Cu 1820 P	Cu 1886P (when blended with Cu 1885P)	30% Decrease
Cu 1885 P	Cu 1885 P and Cu 1886 P (when blended with Cu 1820 P)	30% Decrease
Cu 1950 P	Cu 1950 P	30% Decrease
Cu 1955 P	Cu 1955 P	30% Decrease
Cu 0396 P	Cu 0396 P	30% Decrease
Cu 1160 P	Cu 1230 E 1/16 3F RS; Cu 1155 T 3/16 RL; Cu 1155 T 3/16X1/8 RL	Minimal
Cu 1136 P	Cu 1132 T 1/8	Minimal

Short Term Plan

- **Internal movement of products -**
  - Utilize Copper Calciner #2 for non-NOx products
    - Cu oxide precursors, Cu-0202 P, Cu-0203 T precursors
    - Calciner will be <25% utilized with these products only
    - Explore capital to move Catoxid to Calciner #2 from south end. This would get all chrome products to north end and address utilization of Calciner #2.
  - All NOx-generating non-Cr powders to be calcined on RC5 w/Trimer scrubber: Cu-6081, Cu-5020 / FT-BYD, and precursor for X-540 T
- **Continue qualifying NOx generating non-Cr products with toller PPT**
  - Cu-6081 – already qualified and producing
  - Cu-5020 / FT-BYD, and X-540T powder precursor – qualification work in progress; high likelihood of success
  - Chrome products will not be qualified with PPT
  - PPT has no experience with the chrome regulation and they have less than adequate dust control

Long Term Plan

- Reduced production rates are not the sustainable solution
- The site will need capital to install control equipment for the NOx emissions
- Permit modification would be required for control equipment
- Resources from NCE will need to be engaged to work on the project

The site will request capital for best available technology control equipment

Business Impact

- Cu-6081 – No impact. Toller will produce
- Cu-0396 –
  - Due to make in May
  - Will be delayed depending upon permit modification approval
  - No firm order
- See attached spreadsheet for orders due beyond May

- Need to explore building inventory on key products while volumes are down to be prepared for when volumes increase and plant is operating at limited rates